MARCH 24, 1879.

Some Microscopic Enclosures in Mica.—Mr. THEO. D. RAND described, and exhibited under the microscope, certain crystals, etc., included in mica, chiefly from Swain's quarry, Chester Co. Pa.

Of these, the magnetite dendritic markings, and similar markings of red and brown colors, apparently due to oxidation of the magnetite, are most common and best known. Besides these the following occur:—

Hexagonal crystals, black and opaque; angles, 60° and 120°. In the form of the crystal in this description, the form of the section exhibited under the microscope is intended. A similar crystal, brown in color, perhaps the same substance, translucent; probably biotite or lepidomelane.

Hexagonal or rhombic crystals of a bright red color, sometimes with the angles modified; angles 60° and 120°. There are some specimens which indicate the change of the black into the red rhombs. One of the red rhombs contained a black crystal, with faces parallel to those of the red, and one, a very symmetrical and simple crystal, from near Newtown Square, Delaware Co., Pa., was black for about one-fourth its length, the remainder red.

Rhombic crystals, polarizing light, giving very brilliant colors. At first this was supposed to be due to films of the mica itself, but the regularity and brilliancy of the rhombs, compared with the mica, and their angles, seem to render this more than doubtful, the angles being between $73\frac{1}{2}°$ and 78°. They are almost universally accompanied by, and in contact with, the red or black rhombs, and generally both.

Quartz crystals, generally flattened, sometimes very minute, sometimes large enough for the crystallization to be seen with the naked eye; generally masses of crystals, showing distinct crystallization on the edges only, occasionally separate doubly terminated prisms. Some of the specimens with polarized light are very beautiful.

A substance usually presenting the form of disks, $\frac{1}{50}$ inch and less in diameter, showing, with polarized light, a radiation from the centre, and a change of brilliant colors as the analyzer is rotated. Apparently the same material occurs in acicular crystals, often twinned at 60° and 120°, in a plumose form, and in a form closely resembling a section of agate across the layers. Some of these disks appear to be strictly a radiation of acicular crystals from a centre, others to be made up of three or more oval masses; sometimes the latter are separate, or joined two, three, four, or six together, showing apparent twinning at 60° and 120°; these oval masses, with polarized light, take each a single tint at a time. This material was found also in mica from near Newtown Square,

Delaware Co., Pa., and from the Junction Railroad, above Girard Avenue, Fairmount Park, associated with rhombs apparently of lepidomelane or biotite, and also with quartz.

On the Bryn Mawr Gravel.—Mr. HENRY CARVILL LEWIS remarked, that since the presentation of his paper on the "Surface Geology of Philadelphia and vicinity," he had been able to extend the investigation then begun, considerably beyond the limits of Philadelphia. The "Upland Terrace" has now been traced continuously from near Trenton, through Bucks, Philadelphia, and Delaware counties, to beyond Wilmington in Delaware. As far as could be judged, the clay comes up to a uniform level along this terrace. It has been gratifying to find that the main characteristics of the different deposits, recorded in the paper referred to, are constant throughout the whole of this region.

The principal difficulty in the work has been want of topographical data. While within the limits of the city, the topographical map of the Water Department had been of great service, but beyond these limits elevations had to be estimated from occasional railroad levels. Topography is an aid in all geological investigations, but in the study of surface geology it is a necessity.

It is now desired to call attention to the great development of the Bryn Mawr gravel in Delaware, and to the indications of its assuming an important position in the geology of the Southern States. In Bucks County, north of Philadelphia, the formation has been recognized but scantily, but as we go south of the city it increases largely in extent. Numerous hills in Delaware Co. have been found to be capped by this formation, and in northern Delaware it covers the gneissic hills in patches several miles long and comes close to the river.

The Upland Terrace, after crossing the Delaware State line about two and a-half miles back from the river, gradually approaches it, until near Bellevue Station, P. W. and B. R. R., its base is but half a mile from the river. It forms the upper portion of Wilmington, and then trends S. E. towards Baltimore, north of the railroad and away from the river. In the neighborhood of Wilmington the Bryn Mawr gravel lies directly upon and back of the Upland Terrace, which is here about 300 feet high. It is abundant to the southeast of Tallyville, Del., covering a large tract of country, and it appears on the hills on both sides of the Brandywine in the neighborhood of Dupont's Powder Mills. It is found on the Philadelphia and Wilmington Turnpike, two miles northeast of Wilmington, and one mile from the river. In many places it is five feet deep, and it seems less eroded than in Pennsylvania. It consists of sharp pieces of Mt. Holly conglomerate and iron sandstone with well-rounded pebbles of quartzite and of Potsdam sandstone, being identical with that of Chestnut Hill and Bryn Mawr.